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TRANSMITTAL FORM

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Total Number Of Documents In This Submission	**35**

Application Number	**09/073,748**
Filing Date	**May 6, 1998**
First Named Inventor	**Craig David Weissman et al.**
Group Art Unit	**3624**
Examiner Name	**Colbert, Ella**
Attorney Docket No.	**EPI-003 US; 24489-7001**

ENCLOSURES (check all that apply)

- [X] Fee Transmittal Form (in duplicate)
- [ ] Fee Attached
- [ ] Preliminary Amendment
- [ ] After Final
- [ ] Supplemental Declaration
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement with PTO Form 1449a
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Assignment Papers *(for an Application)*
- [ ] Formal Drawings
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s)_____
- [ ] After Allowance Communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [X] Appeal Communication to Group (28 pgs., in triplicate) *(Appeal Notice, Brief, Reply Brief)*
- [ ] Proprietary Information
- [ ] Change of Address for All Purposes
- [X] Other Enclosure(s) *(please identify below)*: Return Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT

Firm or Individual Name	Fabio Marino Bingham McCutchen LLP Three Embarcadero Center, Suite 1800 San Francisco, CA 94111-4067
Signature	Jeffrey S. Smith, Reg. No. 39,377
Date	July 28, 2003

CERTIFICATE OF MAILING (37 C.F.R. § 1.8(a))

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date indicated below with sufficient postage as Express Mail (Label no. EV348162535US) in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450:

Dated: July 28, 2003 Signature of Person Certifying: Joyce Abriam

Printed Name: Joyce Abriam

PTO/SB/17 (09-01)
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FEE TRANSMITTAL FOR FY 2003

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT	$ 320.00

Complete if Known

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First Named Inventor	Craig David Weissman et al.
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METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 50-2518

Deposit Account Name: Bingham McCutchen LLP

☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☐ **Payment Enclosed:**

☐ Check ☐ Credit Card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Fee Code	Entity Fee ($)	Small Fee Code	Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	$
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) $

2. EXTRA CLAIM FEES

	Extra Claims		Fee from below		Fee Paid
Total Claims	0	x		=	0
Independent Claims	0	x		=	0
Multiple Dependent				=	$

Large Fee Code	Entity Fee ($)	Small Fee Code	Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claims, if not paid
109	84	209	42	**Reissue independent claims over original patent
110	18	210	9	**Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) $

** or number previously paid, if greater; For reissues, see above.

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Fee Code	Entity Fee ($)	Small Fee Code	Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	330	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	$320
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive unavoidable	
141	1,280	241	640	Petition to revive unintentional	
142	1,300	242	650	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions of the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per properties (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	
				Publication Fee	
Other fee (specify)					

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) $320

SUBMITTED BY				Complete *(if applicable)*	
Name (Print/Type)	Jeffrey S. Smith	*Registration No. (Attorney/Agent)*	39,377	*Telephone*	(650) 849-4422
Signature				*Date*	July 28, 2003

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PA:52114125.1/2024489-7007962001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Craig David Weissman et al.		
Assignee:	E.piphany, Inc.		
Filing Date:	May 6, 1998	Examiner:	Colbert, Ella
Serial No.:	09/073,748	Group Art Unit:	3624
Title:	METHOD AND APPARATUS FOR CREATING A WELL-FORMED DATABASE SYSTEM USING A COMPUTER		

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Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 CFR § 1.192

The Applicants submit this Appeal Brief pursuant to the Notice of Appeal filed in this case on May 27, 2003. This brief is submitted in triplicate.

I. Real Party in Interest

The real party in interest is the assignee of the present application, which is E.piphany, Inc. of San Mateo, California.

II. Related Appeals and Interferences

To the best of Applicants' knowledge, no related appeals nor interferences are pending.

III. Status of the Claims

Claims 133 through 165 are currently pending. Claims 133 through 165 are appealed.

IV. Status of Amendments After Final Rejection

No amendments have been filed after the final rejection of February 24, 2003.

V. Summary of the Invention

The invention is defined by the claims and their equivalents. The present section of the Appeal Brief is set forth merely to comply with the requirements of 37 C.F.R. 1.192(c)(3).

Claim 133 recites:

A method of generating one or more database systems, the method comprising:

> providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema;
>
> receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system; and
>
> automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed.

Examples of embodiments are described in the specification on pages 12 through 24. An example of "providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema" can be found on page 13 lines 8 though 17, in reference to Figure 1:

> Figure 1 includes the following elements: source systems 110, a system 100, a web server 186, a consultant computer 190, and a user computer 180. The system 100 includes the metadata 160, an enterprise manager 102, an extraction program 120, staging tables 130, a semantic template conversion program 140, a datamart 150, an aggregate builder 170, and a query and reporting program 104. The metadata 160 includes the following data: schema definitions 161, connectors 162 (connectors are also referred to as extractors), semantic definitions 163, source system information 164, aggregate information 167, measurement information 168, and query/reporting information 169. The user computer 180 is shown running a browser 182. The browser 182 includes a query/results interface 184. The consultant computer 190 shows the enterprise manager interface 192 which shows the metadata organization of the system 100.

An example of "receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system" can be found in Figure 1 as described on page 14 lines 12 through 21, which states:

> The schema definitions 161 hold the definition of the schema for the datamart 150. Typically, a consultant, using the consultant computer 190, can interface with the enterprise manager 102 to define the schema definition 161 for the datamart 150. In particular, the consultant can use the enterprise manager interface 192 to define a star schema for the datamart 150. This star schema is organized around the business processes of the business for which the datamart is being created. What is important is that the consultant can easily define a schema for the datamart 150 and that definition is kept in the schema definitions 161. From the schema definitions 161, not only can the tables in the datamart 150 be generated, but also the automatic extraction and conversion of the data from the source systems 110 can be performed, aggregates are set up, and a query mechanism is generated.

Another example of "receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system" can be found in Figure 2 as described on page 20 lines 8 through 20, which states:

> At block 210, a consultant uses the enterprise manager 102 to define the schema. The schema is defined using the metadata 160. This process is illustrated in greater detail in Figure 7 through Figure 35. Generally, defining the schema involves determining the business processes of the organization for which the system 100 is being implemented. The consultant then defines the star schema for those business processes. The star schema has a fact table and a number of dimensions. The consultant also defines from where the data in the schema is to be derived. That is, the consultant defines from which fields and tables the information is to be extracted from the source systems 110. The consultant also defines how that data is to be put into the datamart 150. That is, the consultant associates each piece of data with a semantic meaning. This semantic meaning defines how the data from the source system is to be manipulated and how it is to populate the datamart 150. At this point, the consultant can also define the aggregates that can be used in the datamart 150.

An example of an embodiment of "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed" can be found on page 15 lines 1 through 9 and page 16 line 12 through page 17 line 20:

> The connectors 162, the semantic definitions 163, and the source system information 164, are all related to the extraction of the data from the source systems 110. The connectors 162 define the access routines for extracting the source system data 110. The semantic definitions 163 define how that extracted data should be converted when it is loaded into the datamart 150. The semantic definitions 163 provide important advantages to the system 100. In particular, the semantic definitions 163 allow for a simplified definition of the datamart 150, consistent meaning of the data in the datamart 150, and allow for complex changes to the schema to be easily propagated to the datamart 150. The source system information 164 defines how to extract the data from the systems 110. . . .
>
> The enterprise manager 102 is a program that is responsible for supporting the definition of the schema, and the creation of the tables in the datamart 150 from the schema definitions 161. The enterprise manager 102 also controls the extraction program 120. (In some embodiments, the extraction program 120 and the semantic template conversion program 140 are included in the enterprise manager 102). During the execution of the extraction program 120, the extraction program 120, the staging tables 130, the semantic template conversion 140, and the datamart 150 are all used. The extraction program 120 uses the connectors 162 and the source system information 164 to extract the information from the source systems 110. The extracted data is loaded into the staging tables 130.
>
> The staging tables 130 are temporary tables used to hold the source system data before performing any semantic conversions on that data. The staging tables 130 also allow for the conversion of the source system data prior to moving the data into the datamart 150.
>
> Once the staging tables 130 have been loaded, the semantic definitions 163 can be accessed from the enterprise manager 102 to convert the information in the staging tables 130 to predefined data semantics. These predefined data semantics allow for powerful queries, consistency in the definition of the meaning of the data in the datamart 150, and allow for changes to be made to the schema. Generally, the semantic template conversion 140 takes data stored in the staging tables 130, performs a conversion of that data according to a corresponding semantic definition

> (defined in the schema definitions 161), and populates the datamart 150 with the converted data.
>
> Importantly, the predefined data semantics substantially simplify the creation and population of the datamart 150. In previous systems, the consultant would have to implement all of the data manipulation and population programs by hand. By selecting a particular semantic definition for a particular fact, or dimension, in the schema, the consultant has automatically defined the access and manipulation for populating programs for that table. Allowing the consultant to select a predefined data semantic not only reduces the tedious coding previously required of the consultant, but also allows for the automatic insertion of foreign keys, transaction types, data, and other information into the schema, and therefore the datamart 150. This additional information causes the datamart to be well-formed.

Another example of an embodiment of "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed" can be found on page 21 line 1 through page 22 line 14:

> Once the datamart 150 has been defined, it can then be automatically built. At block 220, the enterprise manager 102 generates table creation SQL statements according to the definition of the metadata. In one embodiment of the invention, block 220 is accomplished by performing queries on the schema definitions 161 to generate the fact table creation statements, the fact staging table creation statements, the dimension table creation statements, the dimension staging table creation statements, and the dimension mapping table creation statements. These tables are described in greater detail below. From the results of these queries, SQL CREATE TABLE statements are created. Importantly, the schema definitions 161 provide the information the enterprise manager 102 needs to build the datamart 150.
>
> Note that this process can also be used to modify the schema of an existing datamart 150. Therefore, at block 220, the SQL tables being created will cause the existing datamart 150 to be modified without losing the data in the datamart 150.
>
> At block 230, the enterprise manager 102 issues the table generation statements to the database upon which the datamart 150 is being created. That database creates the tables, which correspond to the datamart 150. After block 230, the build the datamart process 202 is complete.

> Now the extraction process 204 can be performed. The extraction process 204 is run on a periodic basis to load data from the source systems 110 into the datamart 150. This process can be run multiple times for the datamart 150.
>
> At block 260, the connectors 162 are used by the enterprise manager 102, and in particular, they are used by the extraction program 120 to extract the data from the source systems 110. The connectors 162 can include SQL statement templates (not to be confused with semantic templates, as described below) for extracting data from the source systems 110. The extraction program 120 uses these templates, in addition to the source system information 164, to generate SQL statements. These SQL statements are issued to the source system 110 and the results are loaded into the staging tables 130. (The staging tables 130 had been created as a result of block 230.) Once the staging tables have been loaded, the data can then be moved into the datamart 150.
>
> At block 270, the staging table data is moved into the datamart 150 using the semantic definitions 163. The semantic definitions 163 are templates for converting the staging tables 130 data according to predefined data semantics. These predefined data semantics, as described below, provide semantic meaning to the data being loaded from the staging tables 130. Note that the data from the staging tables 130, as processed by the semantic template conversion 140, is placed in the tables in the datamart 150.
>
> Thus, the schema definition and the semantic definitions 163 are used to generate and populate the datamart 150 such that the datamart 150 is well-formed. . . .

A still further example of an embodiment of "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133 can be found in the Specification pages 99 through 154 appendix A, which "illustrates the semantic types that may be supported and their corresponding adaptive templates."

"As mentioned previously, the use of the semantic types significantly reduces the amount of work needed to implement the datamart 150. By selecting a semantic type for a particular fact table or dimension table, the consultant automatically selects the corresponding pre-parsed SQL

adaptive templates. The selected adaptive templates are then automatically converted into post parsed SQL statements that include the schema specific information for the datamart 150. Additionally, these post parsed SQL statements include the SQL for accessing and manipulating the datamart 150 tables."

VI. Issues

The issue for this appeal is whether claims 133 through 165 are patentable under 35 U.S.C. 103 over U.S. Patent No. 5,721,903 issued to Anand et al. ("Anand") in view of U.S. Patent No. 6,128,624 issued to Papierniak et al. ("Papierniak").

VII. Grouping of the Claims

Group I. Claims 133-134, 136-139, 141-142, 144-147, 149-150, 152-155, and 157 through 165 stand or fall together as group I and claim 133 is the representative claim of this group.

Group II. Claims 135, 140, 143, 148, 151, and 156 stand or fall together as group II and claim 140 is the representative claim of this group.

VIII. Arguments

Arguments for the patentability of group I begin on page 10. Arguments for the patentability of group II begin on page 20.

The claims of group I are patentable over Anand in view of Papierniak.

Applicants respectfully submit that Anand and Papierniak, either alone or in combination, neither disclose nor suggest "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133. Therefore, applicants respectfully submit that claims 133-134, 136-139, 141-142, 144-147, 149-150, 152-155, and 157 through 165 are patentable under 35 U.S.C. 103 over Anand in view of Papierniak.

The Office action mailed February 24, 2003 states:

> With respect to claims 133, 141, 149, and 163, Anand teaches, providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema (col. 1, lines 5-19 and lines 38-46, col. 3, lines 59-62, and col. 15, lines 44-48); receiving instructions from a user, the instructions are entered into the metadata schema and are used to create a business database system (col. 1, lines 27-62, col. 2, lines 1-16, and col. 4, lines 4-12 and lines 23-28); and automatically generating the business database system according to the instructions contained in the metadata schema such that the business database is well-formed (col. 4, lines 29-50). Anand teaches all of the claim limitations of claims 133, 141, and 149 except a business database system.
>
> Papierniak discloses a business database system (col. 5, lines 39-59, col. 15, lines 11-25, col. 17, lines 52-65, fig. 8 (302, 312) and fig. 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a business database and to combine Anand's metadata system with Papierniak's business database system and to modify Anand in view of his teachings of a data warehouse because such a modification would allow Anand to store large amounts of transaction-level data for later analysis and to have the ability to seek a competitive edge in business.

(page 3). In rejecting claim 133, the examiner stated that Anand discloses that "instructions are entered into the metadata schema and are used to create a business database system." This is an error. Anand is directed to "provid[ing] a system and method for generating reports from a computer database which allows a user to retrieve and analyze data with one tool." (column 1 lines 54-56). In other words, Anand describes a filter for an existing database that extracts pieces of that existing database and presents them to the user in a report.

Embodiments of the present invention, on the other hand, involve creating a database. As claim 133 recites, instructions are received from a user, "wherein the instructions are entered into the metadata schema and are used to create a business database system."

Likewise, the examiner stated that Anand, at col. 4, lines 29-50, discloses "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database is well-formed." Again, this is an error. The section of Anand referenced by the examiner discloses various ways of linking and displaying data. This section certainly does not disclose "automatically generating the business database system according to the instructions contained in the metadata schema," and has nothing to do with a database being "well-formed." Thus, Anand neither discloses nor suggests these elements of claim 133.

The Office action further states:

> Applicants' argue: Anand, therefore, does not disclose or suggest "automatically generating the business database system according to instructions contained in a metadata schema such that the business database system is well-formed" as recited in claim 133 and Papierniak fails to cure these basic deficiencies of Anand has been considered but is not persuasive because col. 11, lines 18-31 of the Anand reference do not state that this is performed as a manual process. In fact, col. 11, lines 18-31 recite "Metadata 25 is initially created during installation of the present invention at the customer's site. The process of creating the metadata 25

> is illustrated in more detail in Fig. 7. What is included in within the metadata 25 depends on the industry (some metadata 25 will be industry-specific and usuable by all companies in that industry),...". There is nothing to indicate from this column and line numbers that the process is a manual process in put by a human being. It is interpreted as being an automatic process. Furthermore, the information has to be entered by some means to create a well-formed business database system even though the instructions are contained in the metadata schema.

(pages 5-6).

Clearly, Anand at col. 11, lines 18-20 discloses "The process of creating the metadata 25 is illustrated in more detail in Figure 7," which shows a tool for creating reports which employs a graphic user interface. The elements shown in the graphical user interface of Figure 7 include pull down menus and soft buttons that allow a user to input information into the computer.

Furthermore, col. 11, lines 18-31 of Anand discloses the "process of creating the metadata." At best, Anand can be read as teaching a tool for creating reports that uses a graphical interface that requires interaction with a user (i.e. is not "automatic"), and therefore does not "automatically" generate a business database system.

This section of Anand, therefore, neither discloses nor suggests "providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema" and "**automatically generating** the business database system **according to the instructions contained in the metadata** schema such that the business database system is well-formed," as recited in claim 133.

Anand is directed to creating a data filter from an existing database. In contrast, the present invention is directed to methods of automatically creating a well-formed database. Thus, Anand's teaching of an existing database teaches away from the present invention.

Applicants therefore respectfully submit that Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

The additional portions of Anand cited by the examiner neither disclose nor suggest "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

The examiner identified that Anand also discloses:

> The present invention relates to expert systems and reporting systems, and more specifically to a system and method for generating reports from a computer database.
>
> Storing large amounts of transaction-level data for later analysis (data warehousing) is becoming recognized as an enabler for businesses that are seeking a competitive advantage. Tightening competitive environments and global economic trends are forcing businesses and entire industries to search for a means to gain an advantage. This advantage can be realized through the use of strategic data relating to their business--allowing better and more timely decisions, leading to a better understanding of their business and support for their customers, that ultimately leads to growth. To make use of data warehouses, the data must be retrieved, organized and then presented in an understandable format.

(Column 1, lines 1-19). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> The marketplace is comprised of various tool vendors whose products provide solutions for a portion of the entire knowledge discovery process. Therefore, to effectively utilize their data, the user community is forced to pick multiple, disjoint tools. In addition, these tools are targeted toward

> the expert user who has an in-depth knowledge of the data and database formats or the various analytic methods that are implemented in the tool. Existing products also do not let the business user explicitly and iteratively represent business knowledge. Finally, the output of existing tools consists of tables of numbers that users have to analyze and interpret.
>
> Data warehouses, and databases in general, typically have complex structure organized for efficiency of data retrieval, not ease-of-use by the end user. Users, especially business users, desire reports in their vocabulary, not the vocabulary of the database. While some tools in the marketplace allow a user to define new terms and map those terms to the database, the management of related sets of new terms is not supported. That is, the relationship of a new term to existing terms is not automatically detected for the user.
>
> In addition to these difficulties, it is common for the contents of a report to cause a user to desire another, similar report. Saving and re-using sets of related reports (re-generating the reports over a new set of data) is also desired. The generation of related reports and the re-generation of reports over new data is a capability not adequately available in the marketplace.
>
> Therefore, it would be desirable to provide a system and method for generating reports from a computer database which allow a user to retrieve and analyze data with one tool without requiring the user to have knowledge of underlying data structures or of the SQL programming language, which allow a user to define new terms and detect and manage relationships between terms, which allow a user to easily generate related reports, and which allow a user to re-run sets of related reports over new data.

(Column 1, lines 27-62). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> A system and method for generating a report for a user which allows the user to make decisions, without requiring the user to understand or interpret data itself. A database management program executed by a server within a system for generating the report for the user includes a first subsystem for translating user requests for data, for generating dimensional queries for retrieving data from a database, and for processing user modifications to data types used in generating the report. A second

> subsystem coupled to the first subsystem reads data from the database, creates the data types, creates a mapping of the data types to the data, uses the mapping to translate user-initiated dimensional queries received from the first subsystem into Structured Query Language (SQL), and returns query results to the first subsystem. A third subsystem creates the report at a predetermined time.

(Column 2, lines 1-16). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> A Data Warehouse is a very large collection of data that is housed in one or more databases. These databases usually reside on database server computers and can be either in one location or distributed geographically.

(Column 3, lines 59-62). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> Enterprise Information Factory (EIF) is a commercial software package that allows typical business users to access their data warehouse data. The data warehouse is essentially a passive environment that usually requires the use of SQL code and knowledge about the structure of the database to access data. The EIF differs from the data warehouse by providing a foundation for providing tools to allow users without SQL or database knowledge to get data out of their databases.

(Column 4, lines 4-12). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> Metadata is the collection of information about the end user's particular business. After installation this information is stored in the end user's

> database and is used to tailor reports to the end user's particular business needs. Metadata includes, but is not limited to, Business Concepts, Business Indicators and Segments.
>
> Object Linking and Embedding (OLE) is a computer format that allows objects (e.g., graphs, tables) in computer documents to, when double
>
> clicked on, bring up the software application that created the object (graph, table, document).
>
> Primitive Business Indicators are Business Indicators that are directly mappable to data in the data warehouse. They are set up during installation of the present invention and are not changeable by the user.
>
> Segments are user-defined groups that are defined within a Business Concept having a meaningful attribute in common. For instance, the a segment "Senior Customers" might be those customers whose age is greater than 65 years.
>
> Reports are compound documents that display data from a database in text and graphics (e.g., graphs, tables). Reports are the result of running a Smart Report Definition. Smart Reports are in the HTML format and are OLE 2.0 compliant.
>
> Smart Report Definitions are System Templates that have been customized to include particular Business Concepts, Business Indicators, and/or segments. Smart Report Definitions can be immediately "run" to produce a "Smart Report", saved to be run later or saved and scheduled to be run later.

(Column 4, lines 23-50). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Anand further discloses:

> A mapping from business concepts to database entities is stored in the metadata 25 and is used in the formatting of the SQL statements. SQL generator 80 provides to DAI subsystem 14 for use in creating Smart Reports.

(Column 15, lines 44-48). This section of Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Therefore, Anand neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Papierniak discloses:

> In accordance with one embodiment of the invention, a system integrates data elements from an operational database of an Internet Service Provider (ISP) and Commerce Service Provider (CSP) into a predetermined format for supporting collection of the Internal and/or electronic commerce data. The system includes a database storing the Internet and/or electronic commerce data for interrogation by the ISP/CSP, and a user station including a design database. The design database includes a logical data model providing a description of the database facilitating the integration of the Internet and/or electronic commerce and operational data and facilitating query and report access of the database. The design database also includes a formatted file library providing classifications including at least one of process characterizations, customer descriptions, preference determinations, and behavior patterns, the classifications being reusable for at least one of different technical processes and different customer problems. As optional, a user interface is also provided which is capable of providing the functions of query access and report access of the design database.

(Column 5, lines 39-59). This section of Papierniak neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Papierniak further discloses:

> WebWarehouse 302 is separated from the operational client-accessible systems such as Web servers and Web-Based databases, but is populated by data from these systems. It exists to make the data available for

> interrogation by the business users from the perspectives of an enterprise interest and associated business benefits. The data in the WebWarehouse is preferably time-stamped and associated with a defined period of time, and is usually subject-oriented such as customer, product, activity.
>
> The change of this data in the WebWarehouse occurs as a result of decision support requirements, and update from one of the data sources 316. Therefore, the SmartecAdmin 312 must have the capabilities to determine and control the search request and information flow between the operational databases and the WebWarehouse.

(Column 15, lines 11-25). This section of Papierniak neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Papierniak further discloses:

> WebWarehouse 302 furnishes the information necessary to manage an Internet Service or an electronic commerce business from the perspectives outlined above. Different WebWarehouse views can be extracted to provide an information framework to drive specific decision-support efforts. WebWarehouse also includes tools that provide the appropriate logical design, physical design and documentation. Design templates are available to identify the required data elements from the customer's operational databases. There are also processes and tools to integrate customer-specific elements into WebWarehouse's core design. This architecture described herein may also be implemented as a datamart. A datamart is structured to support specific decision support needs, typically at a departmental level.

(Column 17, lines 52-65). This section of Papierniak neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Papierniak further discloses:

FIG. 8 provides an expanded view of the architecture of the present invention;

FIG. 9 is an illustration of the various data sources and outputs for the present invention

(Column 6, lines 64-67). This section of Papierniak neither discloses nor suggests "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Even if Anand and Papierniak were combined, the combination would neither teach nor suggest "automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed," as recited in claim 133.

Therefore, applicants respectfully submit that claim 133 is patentable over Anand in view of Papierniak.

Arguments for the patentability of group II.

Claim 133 recites "receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system."

Claim 140, which depends from claim 133, recites "wherein the instructions provide semantic definitions; and wherein the business database system is automatically generated using the semantic definitions such that the business database system is well-formed."

An example of an embodiment of "receiving instructions from a user," and as recited in independent claim 133, "wherein the instructions provide semantic definitions; and wherein the business database system is automatically generated using the semantic definitions such that the business database system is well-formed," as recited in dependent claim 140, can be found in the Specification pages 99 through 154, appendix A, which illustrates examples of "instructions" that "provide semantic definitions," such as semantic types and their corresponding adaptive templates, which are "received from a user" and "entered into the metadata schema." With the "instructions" that "provide semantic definitions," "the business database system is automatically generated using the semantic definitions such that the business database system is well-formed," as recited in claim 140.

An advantage of this method is discussed on page 99:

> As mentioned previously, the use of the semantic types significantly reduces the amount of work needed to implement the datamart 150. By selecting a semantic type for a particular fact table or dimension table, the consultant automatically selects the corresponding pre-parsed SQL adaptive templates. The selected adaptive templates are then automatically converted into post parsed SQL statements that include the schema specific information for the datamart 150. Additionally, these post parsed SQL statements include the SQL for accessing and manipulating the datamart 150 tables.

This advantage is also described on page 22:

> The semantic definitions 163 are templates for converting the staging tables 130 data according to predefined data semantics. These predefined data semantics, as described below, provide semantic meaning to the data being loaded from the staging tables 130. Note that the data from the staging tables 130, as processed by the semantic template conversion 140, is placed in the tables in the datamart 150.
>
> Thus, the schema definition and the semantic definitions 163 are used to generate and populate the datamart 150 such that the datamart 150 is well-formed.

The Office action, on page 5, states that with

> respect to claims 140, 148, and 156, Anand teaches, the instructions provide semantic definitions (col. 10, lines 30-37) and the business database system is automatically generated using the semantic definitions such that the business database system is well-formed.

(col. 17, lines 6-27 and col. 18, lines 38-61). This is an error.

Anand is directed to creating a data filter from an existing database. In contrast, the present invention is directed to methods of automatically creating a well-formed database by receiving instructions that provide semantic definitions from a user. Thus, Anand's teaching of an existing database teaches away from "instructions" that "provide semantic definitions" and are used to automatically generate the business database system such that the business database system is well-formed.

Anand discloses, at column 10 lines 30-37, that:

> Metadata repository 76 contains a representation of metadata 25 within data warehouse 24. This metadata 25 is the core of system 10; it provides a customizable business view over the relational data in warehouse 24 and is the primary vocabulary for the specification of Smart Reports. Metadata repository 76 gets populated at startup time by DSM subsystem 16 from the persistent metadata representation in data warehouse 24.

This "metadata 25" that "provides a customizable business view" is further discussed in column 11 lines 17-20:

> Metadata 25 is initially created during installation of the present invention at the customer's site. The process of creating the metadata 25 is illustrated in more detail in FIG. 7.

Clearly, Anand discloses creating metadata using a graphical user interface as shown in FIG. 7. For example, Anand at col. 11, lines 17-20 discloses "The process of creating the metadata 25 is illustrated in more detail in Figure 7," which shows a tool for creating reports which employs a graphic user interface. The elements shown in the graphical user interface of Figure 7 include pull down menus and soft buttons that allow a user to input information into the computer.

Anand neither discloses nor suggests "instructions" that "provide semantic definitions."

This portion of Anand, therefore, neither discloses nor suggests "providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema" and "the business database system is automatically generated using the semantic definitions such that the business database system is well-formed," as recited in claim 140.

Papierniak neither discloses nor suggests "providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema" and "the business database system is automatically generated using the semantic definitions such that the business database system is well-formed," as recited in claim 140.

Even if Anand and Papierniak were combined, the combination would neither discloses nor suggests "providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata

schema" and "the business database system is automatically generated using the semantic definitions such that the business database system is well-formed," as recited in claim 140.

Therefore, applicants submit that claim 140 is patentable over Anand in view of Papierniak.

IX. CONCLUSION

For the above reasons, Applicants respectfully submit that rejection of claims 133-165 based on 35 U.S.C. § 103(a) has been overcome. Accordingly, Applicants request that the Board of Patent Appeals and Interferences overrule the Examiner and allow claims 133-165.

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APPENDIX: Pending Claims

Listing of appealed claims 133-165:

133. A method of generating one or more database systems, the method comprising:

providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema;

receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system; and

automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed.

134. The method of claim 133, wherein automatically generating the business database system further comprises:

automatically generating tables according to the instructions.

135. The method of claim 133, wherein loading data into the business database system further comprises:

extracting data from sources specified in the instructions;

loading the data into staging tables; and

loading the data from the staging tables into the business database system based on semantic definitions provided in the instructions.

136. The method of claim 133, further comprising:

building aggregate tables according to the instructions.

137. The method of claim 133, wherein operating on the business database system further comprises:

receiving further instructions from a user to define a query mechanism; and

generating queries according to the further instructions.

138. The method of claim 133, wherein operating on the business database system further comprises:

generating reports according to the instructions.

139. The method of claim 133, further comprising:

receiving a modification of the metadata schema; and

automatically adjusting the business database system according to the modification.

140. The method of claim 133, further comprising:

wherein the instructions provide semantic definitions; and

wherein the business database system is automatically generated using the semantic definitions such that the business database system is well-formed.

141. A computer system, comprising:

a computer including a processor and a memory;

a computer program stored in the memory and executed by the processor, wherein the computer program includes instructions for:

providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema;

receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system; and

automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed.

142. The computer system of claim 141, wherein the computer program further includes computer instructions for:

automatically generating tables according to the instructions.

143. The method of claim 141, wherein the computer program further includes computer instructions for:

extracting data from sources specified in the instructions;

loading the data into staging tables; and

loading the data from the staging tables into the business database system based on semantic definitions provided in the instructions.

144. The method of claim 141, wherein the computer program further includes computer instructions for:

building aggregate tables according to the instructions.

145. The method of claim 141, wherein the computer program further includes computer instructions for:

receiving further instructions from a user to define a query mechanism; and

generating queries according to the further instructions.

146. The method of claim 141, wherein the computer program further includes computer instructions for:

generating reports according to the instructions.

147. The method of claim 141, wherein the computer program further includes computer instructions for:

receiving a modification of the metadata schema; and

automatically adjusting the business database system according to the modification.

148. The method of claim 141, wherein the computer program further includes computer instructions for:

wherein the instructions provide semantic definitions; and

wherein the business database system is automatically generated using the semantic definitions such that the business database system is well-formed.

149. A computer readable storage medium encoded with software instructions, wherein execution of the instructions comprises:

providing a metadata system that includes a metadata schema, a facility for entering instructions into the metadata schema, and a facility for manipulating the metadata schema;

receiving instructions from a user, wherein the instructions are entered into the metadata schema and are used to create a business database system; and

automatically generating the business database system according to the instructions contained in the metadata schema such that the business database system is well-formed.

150. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

automatically generating tables according to the instructions.

151. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

extracting data from sources specified in the instructions;

loading the data into staging tables; and

loading the data from the staging tables into the business database system based on semantic definitions provided in the instructions.

152. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

building aggregate tables according to the instructions.

153. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

receiving further instructions from a user to define a query mechanism; and generating queries according to the further instructions.

154. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

generating reports according to the instructions.

155. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

receiving a modification of the metadata schema; and

automatically adjusting the business database system according to the modification.

156. The computer readable storage medium of claim 149, wherein execution of the instructions further comprises:

wherein the instructions provide semantic definitions; and

wherein the business database system is automatically generated using the semantic definitions such that the business database system is well-formed.

157. The method of claim 133, further comprising loading data into the business database system according to the instructions contained in the metadata schema.

158. The method of claim 157, further comprising operating on the business database system according to the instructions contained in the metadata schema.

159. The method of claim 141, further comprising loading data into the business database system according to the instructions contained in the metadata schema.

160. The method of claim 159 further comprising operating on the business database system according to the instructions contained in the metadata schema.

161. The method of claim 149 further comprising loading data into the business database system according to the instructions contained in the metadata schema.

162. The method of claim 161 further comprising operating on the business database system according to the instructions contained in the metadata schema.

163. A method of automatically generating a business database system, the method comprising:

providing a metadata schema;

entering user instructions into the metadata schema; and

automatically generating a well-formed database system according to the instructions entered into the metadata schema.

164. The method of claim 163, further comprising loading data into the automatically-generated business database system according to the user instructions entered into the metadata schema.

165. The method of claim 164, further comprising operating on the business database system according to the user instructions entered into the metadata schema.